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(Amended) A method for optical measuring systems, comprising a sensor element [(6)] connected to a measuring and control unit [(10)] via an optical connection [(3)] and being adapted for providing a signal corresponding to a measurement of a physical parameter [(p)] influencing the sensor element [(6)], said method comprising generation of a measuring signal that is brought to come in towards the sensor element [(6)], and

detection of said measuring signal [(B)] in the measuring and control unit [(10)], after influencing the measuring signal in the sensor element [(6)],

[characterised] characterized by the method further comprising:

partial reflection of the measuring signal at a point along the optical

connection [(3)], located at a predetermined distance from the sensor element [(6)],

detection of the intensity of the signal [(A)] corresponding to said partially
reflected measuring signal, and

determination of a measurement of said parameter [(p)] based upon the intensity of the partially reflected signal [(A)] and the intensity of the measuring signal [(B)].

2. (Amended) The method according to claim 1, [characterised] <u>characterized</u> by comprising:

determination of a value corresponding to the quotient of the intensity $[(I_A)]$ of said reflected signal [(A)] and the intensity $[(I_B)]$ of said measuring signal [(B)], and

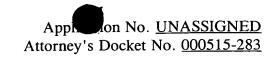
determination of a measurement of said parameter [(p)] based upon said quotient $[(I_A/I_B)]. \label{eq:continuous}$

3. (Amended) The method according to claim 1, [characterised] <u>characterized</u> by comprising:

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determination of a value corresponding to the difference between the intensity $[(I_A)]$ of said reflected signal [(A)] and the intensity $[(I_B)]$ of said measuring signal [(B)], and determination of a measurement of said parameter [(p)] based upon said difference $[(I_A-I_B)]$.

- 4. (Amended) A method according to [any one of the preceding claims] <u>claim 1</u>, [characterised] <u>characterized</u> by said measuring signal [(B)] being a light pulse.
- 5. (Amended) A method according to [any one of the preceding claims] <u>claim 1</u>, [characterised] <u>characterized</u> by the feeding of the measuring signal into the sensor element [(6)] causing optical interference in a cavity [(6a)] of the sensor element [(6)].
- 6. (Amended) A method according to [any one of the preceding claims] claim 1, [characterised] characterized by being used for measuring pressure [(p)], said sensor element [(6)] defining a membrane [(6b)], acted upon by the pressure [(p)] surrounding the sensor element [(6)].
- 7. (Amended) A method according to [any one of the preceding claims] <u>claim 1</u>. [characterised] <u>characterized</u> by being used for measuring the acceleration or the temperature of said sensor element [(6)].
- 8. (Amended) A method for optical measuring systems, comprising a sensor element [(6)] connected to a measuring and control unit [(10)] via an optical connection [(3)] and being adapted for providing a signal corresponding to a measurement of a physical parameter [(p)] influencing the sensor element [(6)], said method comprising generation of a signal which is brought to come in towards the sensor element [(6)], and



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detection of said signal in said measuring and control unit [(10)] after influencing the measuring signal in said sensor element [(6)],

[characterised] <u>characterized</u> by the method further comprising determination of a measurement of the length of said optical connection [(3)], based upon a measured period of time elapsing from the generation of said signal until the detection of said signal.

- 9. (Amended) The method according to claim 8, [characterised] characterized by said length determination being used for identification of the current type of sensor element [(6)], said length of said optical connection [(3)] being selected to correspond to a specific type of sensor element [(6)].
- 10. (Amended) A device for optical measuring systems, comprising a sensor element [(6)] connected to a measuring and control unit [(10)] via an optical connection [(3)] and being adapted for providing a signal corresponding to a measurement of a physical parameter [(p)] influencing the sensor element [(6)], said device further comprising a light source [(2)] functioning to generate a measuring signal brought to come in towards the sensor element [(6)], and a detector [(7)] for detecting the intensity of the measuring signal [(B)] in the measuring and control unit [(10)], after influencing the measuring signal in the sensor element [(6)],

[characterised] characterized by comprising a semi-reflecting device [(12)] for partial reflection of the measuring signal at a point along the optical connection [(3)] at a predetermined distance from the sensor element [(6)], said detector [(7)] being arranged for detection of the intensity of the signal [(A)] corresponding to said partially reflected measuring signal, and by comprising an evaluation unit [(9)] for determining a measurement of said parameter [(p)], based upon the intensity of the partially reflected signal [(A)] and the intensity of the measuring signal [(B)].

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- 11. (Amended) The device according to claim 10, [characterised] <u>characterized</u> by said sensor element [(6)] comprising a cavity [(6a)], shaped so as to create optical interference when feeding said measuring signal into the cavity [(6a)].
- 12. (Amended) The device according to claim 9, [characterised] <u>characterized</u> by said cavity [(6a)] being obtained through building up molecular silicone and/or silicone dioxide layers, and an etching procedure.
- 13. (Amended) The device according to claim 12, [characterised] <u>characterized</u> by said cavity [(6a)] being obtained through [utilizing a bonding procedure.